

Amendments to the Claims:

Listing of Claims:

Claims 1-10 (canceled).

Claim 11 (new). A method for aligning and exposing a semiconductor wafer with a structural pattern in an exposure device, which comprises the following steps:

- a) providing a semiconductor wafer with at least one exposure field having a first layer formed with at least one alignment mark for aligning the semiconductor wafer in the exposure device for exposure of the exposure field;
- b) forming a measurement structure with a first locational position in the exposure field in the first layer;
- c) subjecting the exposure field with the measurement structure to a chemical or physical process;
- d) subsequently measuring a second locational position of the measurement structure;
- e) comparing the first and second locational positions for determining a difference characterizing an influence of the chemical or physical process on the measurement structure in the exposure field;

f) loading the semiconductor wafer into the exposure device and aligning the semiconductor wafer via the at least one alignment mark for defining an exposure position for the exposure field;

g) correcting the exposure position of the exposure field in the exposure device in dependence on the difference for compensating for the influence of the chemical or physical process;

h) exposing with the corrected exposure position;

i) repeating steps a) to h) for correcting at least two further exposure fields, with respective corrections having a nonlinear dependence on the position of the first exposure field and of the at least one further exposure field on the semiconductor wafer.

Claim 12 (new). The method according to claim 11, wherein the step of correcting the exposure position of the exposure fields in each case comprises correcting equal to the difference in magnitude and opposite to the difference in direction.

Claim 13 (new). The method according to claim 11, wherein the chemical or physical process on the semiconductor wafer is a chemical mechanical polishing process.

Claim 14 (new). The method according to claim 11, wherein the chemical or physical process is a deposition process for depositing a second layer in such a way that the measurement structure is discernible in the second layer.

Claim 15 (new). The method according to claim 11, which further comprises:

forming a second measurement structure at a first distance from the first measurement structure in the exposure field in the first layer;

after deposition of the second layer, etching the second measurement structure free in an etching step from the second layer for defining a reference structure;

determining a second distance between the first measurement structure in the second layer and the second structure in the first layer during a measurement of the second locational position; and

comparing the first distance with the second distance during the comparison for determining the difference.

Claim 16 (new). The method according to claim 11, which comprises measuring the locational position with a scanning electron microscope.

Claim 17 (new). The method according to claim 11, which comprises measuring the locational position by determining the electrical resistance of a measurement structure.

Claim 18 (new). The method according to claim 17, which comprises forming the first and second measurement structures in a kerf region of an exposure field comprising at least one electrical circuit to be formed.

Claim 19 (new). A method for aligning and exposing a first semiconductor wafer with a structural pattern in an exposure device, the method which comprises the following steps:

a) providing a second semiconductor wafer with at least one first exposure field, a first layer on the first exposure field, and at least one alignment mark for

aligning a semiconductor wafer in an exposure device for exposing the exposure field;

b) forming a measurement structure with a first locational position in the first exposure field in the first layer;

c) subjecting the exposure field with the measurement structure to a chemical or physical process;

d) subsequently measuring a second locational position of the measurement structure;

e) comparing the first and second locational positions for determining a difference characterizing an influence of the chemical or physical process on the measurement structure in the exposure field;

f) providing the first semiconductor wafer with a second exposure field for carrying out an exposure in an exposure device, the second exposure field having a same relative position on the first semiconductor wafer as the first exposure field on the second conductor wafer;

g) aligning the first semiconductor wafer using the at least one alignment mark for defining an exposure position for the second exposure field;

h) correcting the exposure position of the second exposure field in the exposure device depending on a determined difference for compensating for an influence of the chemical or physical process;

i) correction the exposure position of the exposure field in the exposure device depending on the determined difference for compensating for an influence of the chemical or physical process;

k) repeating steps a) to i) for correcting at least two further exposure fields, the respective corrections having a nonlinear dependence on the position of the respective exposure field on the first semiconductor wafer.

Claim 20 (new). The method according to claim 19, which comprises correcting the exposure position of the second exposure fields in each case equal to the difference in magnitude and opposite to the difference in direction.